Investment Decisions and Firm Growth Among SMEs: The Moderating Role of CEO Duality in Ghana[1]

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Abstract:

Background: Small and medium-sized enterprises (SMEs) form the bulk of Ghana's private sector and are a major source of jobs, yet many of them grow slowly because scarce capital is committed to projects that do not pay off. How SME leaders take investment decisions, and who holds authority over those decisions, is therefore an economic question as much as a managerial one. Objectives and scope: The study examined the effect of investment decisions (ID) on firm growth (FG) among SMEs in the Accra and Tema metropolitan areas, the effect of CEO duality (CEOD), where one person serves as both chief executive officer (CEO) and board chair, on FG, and whether CEOD moderates the ID–FG relationship, with firm age, firm size and industry as control variables. Methodology: Agency Theory and the Resource-Based View (RBV) informed the framework. Survey data from 341 SME owners, managers and decision-makers were analysed with Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS 4, supported by several robustness checks. Results: ID had a strong positive effect on FG ($\beta = 0.650$, $t = 12.768$, $p < 0.001$), and CEOD also had a positive effect on FG ($\beta = 0.283$, $t = 5.530$, $p < 0.001$). The ID × CEOD interaction was positive and significant ($\beta = 0.051$, $t = 2.166$, $p = 0.030$) and remained significant after the control variables were added ($\beta = 0.031$, $t = 2.583$). Firm age ($\beta = 0.371$), firm size ($\beta = 0.317$) and industry ($\beta = 0.206$) also had positive effects on FG, and the model explained 81.5% of the variance in FG ($R^2 = 0.815$). Conclusion: Investment decisions translate into stronger growth when decision authority is unified, which suggests that SME owners, investors and support agencies should treat investment planning and leadership structure as joint decisions.

Keywords: Investment Decisions; Firm Growth; CEO Duality; SMEs; Agency Theory; Resource-Based View; Ghana.

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1. Introduction

Small and medium-sized enterprises (SMEs) form the backbone of private economic activity in Ghana. They dominate trade, light manufacturing, construction, hospitality and services, absorb a large share of the urban workforce, and supply many of the goods and services consumed in cities such as Accra and Tema (Gherghina et al., 2020; Kerr & McDougall, 2026). Their growth therefore matters for national income, tax revenue and job creation, particularly as Ghana seeks broader private-sector expansion after the debt and inflation pressures of recent years (World Bank, 2025). Yet many Ghanaian SMEs remain small for long periods. Limited access to finance, high borrowing costs and weak management systems restrict the funds available for expansion, so the way scarce capital is committed to equipment, technology, stock, people and new markets largely determines which firms grow and which stagnate (Naradda Gamage et al., 2020; Nkansah-Sakyi, 2023).

In this paper, investment decisions (ID) refer to the choices SME leaders make about how much to invest, in what, when and with what level of risk, while firm growth (FG) refers to the expansion of sales, assets, employment, profit and market reach. CEO duality (CEOD) describes the situation in which the same person serves as Chief Executive Officer (CEO) and chair of the board. Firm age (FA), firm size (FS) and industry (IND) are used as control variables, and the analysis is carried out with Partial Least Squares Structural Equation Modelling (PLS-SEM). These abbreviations are used throughout the remainder of the paper.

Investment decisions are a central driver of firm growth, as they determine how resources are allocated to generate future returns and sustain competitiveness (Almansour et al., 2023; Mittal, 2022). While prior studies establish that effective investment decisions can enhance firm performance, empirical findings remain inconsistent, particularly within Small and Medium Enterprises (SMEs) operating in emerging economies. Some studies report positive growth outcomes from investments in productive assets, innovation, and market expansion (Chen et al., 2024; Farida & Setiawan, 2022), whereas others show weak or negative effects due to financial constraints, poor timing, or inefficient resource allocation (Ahmed et al., 2020; Yiu et al., 2020). These mixed results suggest that the investment–growth relationship is context-dependent and influenced by internal firm characteristics. To improve estimation accuracy, the study also controls for firm-specific characteristics such as firm size, firm age, and industry effects, as these factors may independently influence firm growth.

SMEs, which are central to employment creation and economic development, are particularly vulnerable to inefficiencies in investment decision-making due to structural and governance limitations (Naradda Gamage et al., 2020; OECD, 2019). These structural limitations include concentrated ownership, limited managerial expertise, weak internal controls, restricted access to finance, and informal organizational processes, all of which increase the likelihood of suboptimal investment decisions.

CEO duality where the same individual serves as both Chief Executive Officer and Board Chairperson is therefore common in such firms. While this structure may facilitate faster decision-making and strategic alignment, it can also alter the mechanism through which investment decisions influence growth. Specifically, CEO duality may strengthen or weaken this relationship. It strengthens the relationship when the dual role enables coherent strategic planning and swift execution of growth-oriented investments, ensuring effective resource deployment. Conversely, it weakens the relationship when concentrated power reduces oversight, encourages personal bias, or leads to resource misallocation.

This study addresses these gaps by examining the relationship between investment decisions and firm growth among SMEs in Ghana, with CEO duality explicitly modelled as a **moderating variable**. Drawing on Agency Theory and the Resource-Based View (RBV), the study provides a framework for understanding how governance structures influence the efficiency of resource allocation and strategic decision-making (Wijethilake & Ekanayake, 2020; Ferreira & Ferreira, 2025; Lubis, 2022). While RBV emphasizes the role of investments in leveraging valuable and rare resources for competitive advantage, Agency Theory highlights how governance mechanisms, such as CEO duality, affect managerial behaviour and decision outcomes.

The novelty of this study lies in incorporating CEO duality as a moderator in the investment–growth relationship, thereby moving beyond the dominant focus on direct effects in prior research (Suteja et al., 2023; Saif Ul Islam et al., 2022). By doing so, the study provides a theoretically grounded explanation for the inconsistent findings reported in the literature and responds to calls for incorporating contingent factors in empirical models (Rasoolimanesh et al., 2021; Hayes, 2017).

Empirically, the study contributes evidence from Ghana, where SMEs operate under conditions of financial constraints, regulatory uncertainty, and governance variability. The findings show that investment decisions significantly influence firm growth; however, this relationship is significantly moderated by CEO duality. Specifically, CEO duality strengthens the positive effect of investment decisions when it enables faster and more coherent strategic execution (Cambrea et al., 2025; Nuanpradit, 2024; La Rocca et al., 2024), but weakens the relationship when reduced oversight leads to inefficient or misaligned investments (Ali et al., 2022; Romano et al., 2020; Mubeen et al., 2020).

The study contributes to knowledge in three ways. On the theoretical side, it combines Agency Theory and the Resource-Based View (RBV) to show that the investment–growth relationship depends on how decision authority is structured, with CEO duality conditioning the effectiveness of investment decisions. On the empirical side, it provides evidence from Ghanaian SMEs on the direct and moderating effects of CEO duality, which helps to reconcile earlier inconsistent findings on the relationship between investment and growth. On the practical side, it shows that the returns from investment strategies depend on leadership structure as well as on resource allocation, which gives SME owners, investors and regulators a basis for designing governance arrangements that support growth.

Overall, this study advances the literature by demonstrating that investment decisions are not purely financial choices but governance-conditioned strategic actions, with CEO duality conditioning their effect on firm growth. By explicitly modelling CEO duality as a moderator and clarifying its channels of influence through both agency cost reduction and efficient resource deployment the study provides a clearer explanation of when, why, and how investment decisions translate into firm growth in SMEs. This approach not only reconciles prior inconsistencies in the literature but also offers practical guidance for SME owners, investors, and policymakers seeking to optimize governance structures for growth.

The aim of the study is to establish whether, and under what leadership arrangement, investment decisions raise the growth of Ghanaian SMEs. Three objectives follow from this aim: to examine the effect of ID on FG, to assess the effect of CEOD on FG, and to determine whether CEOD moderates the ID–FG relationship once FA, FS and IND are controlled. Accordingly, the study answers three research questions. RQ1: What is the effect of investment decisions on the growth of SMEs in Ghana? RQ2: What is the effect of CEO duality on the growth of SMEs in Ghana? RQ3: Does CEO duality change the strength of the relationship between investment decisions and SME growth when firm age, firm size and industry are held constant?

The remainder of the paper is organised as follows. Section 2 reviews Agency Theory, the RBV and the empirical literature and develops the hypotheses and the conceptual framework. Section 3 describes the research design, sampling, measurement, model specification and robustness checks. Section 4 presents the measurement and structural model results, Section 5 discusses the findings in relation to the Ghanaian economy and earlier studies, and Section 6 concludes with the implications, limitations and directions for further research.

2. Literature Review

2.1 Agency Theory and Investment Decisions

Agency Theory provides a foundational framework for understanding how investment decisions (ID) affect firm growth (FG). According to Jensen and Meckling (2019), conflicts of interest between managers (agents) and shareholders (principals) can lead to suboptimal investment decisions if managerial incentives are misaligned with owner objectives. Governance mechanisms, such as board oversight and incentive structures, are therefore critical in guiding managerial behavior toward decisions that maximize shareholder wealth. Empirical evidence shows that firms with effective governance structures are more likely to undertake investments that generate superior growth outcomes (Naz et al., 2022; Dong et al., 2021).

Within this framework, CEO duality where the CEO also serves as Board Chair moderates the ID–FG relationship by influencing both decision authority and monitoring. Firms with CEO duality may implement investment strategies more rapidly, aligning managerial actions with firm objectives. However, concentrated executive power can reduce independent oversight, increasing the risk of inefficient or self-serving

investment decisions (Alves, 2023; Le et al., 2023; Alves, 2020). Hence, the effectiveness of investment decisions is contingent upon the balance between authority concentration and governance oversight.

Agency Theory was developed mainly for firms in which ownership and control are separated, so its use in a study of SMEs requires justification. The theory is applied here to SMEs that have a board in which the CEO and chair positions can be held either by the same person or by different persons; in the sample, 172 firms (50.4%) combined the two positions and 169 firms (49.6%) separated them. In such SMEs, agency conflicts do not arise between dispersed shareholders and professional managers, as in large listed companies, but between owner-managers and minority or non-managing owners, between family and non-family shareholders, and between owners and lenders who finance expansion (Abor & Biekpe, 2007; Teixeira & Carvalho, 2024). Evidence from Chinese SMEs and from new ventures shows that board leadership structure affects performance in smaller firms (Li et al., 2022; Gan & Erikson, 2022), and a recent systematic review confirms that the consequences of CEO duality depend on firm size and ownership context (Mehmood et al., 2025). Agency Theory is therefore used together with the RBV, which explains how the resources of small firms are deployed, rather than on its own.

2.2 Resource-Based View (RBV) and Firm Growth

The Resource-Based View (RBV) complements Agency Theory by emphasizing how firms achieve growth through the strategic deployment of valuable, rare, inimitable, and non-substitutable (VRIN) resources (Ferreira & Ferreira, 2025). Investment decisions are the primary vehicle through which these resources—such as financial capital, human expertise, and technological assets—are mobilized to create competitive advantage. Firms that align their investment choices with their resource endowments tend to experience superior growth outcomes (Lubis, 2022; Beamish & Chakravarty, 2021).

In this theoretical context, CEO duality functions as a moderator that shapes the efficiency of resource allocation. Unified leadership under CEO duality allows for coordinated deployment of resources, reducing delays and ensuring that investments leverage the firm's unique capabilities effectively. Conversely, weak oversight associated with duality can lead to inefficient resource use, limiting growth potential (Curea et al., 2022; Nguyen et al., 2021; Madhani, 2017). This highlights that investment effectiveness depends not only on the availability of resources but also on how governance structures facilitate their strategic use.

2.3 Integration of Agency Theory and RBV

Integrating Agency Theory and the RBV provides a robust framework for understanding how investment decisions drive SME growth and why CEO duality serves as a critical moderator. From the Agency Theory perspective, CEO duality can reduce agency costs by aligning managerial incentives with owner objectives, centralizing decision-making, and accelerating approval of growth-oriented investments. From the RBV perspective,

duality enhances resource allocation efficiency by enabling coordinated deployment of firm-specific resources to high-value projects.

CEO duality positively moderates the ID–FG relationship because it simultaneously reduces agency costs and improves resource deployment. By centralizing authority, it ensures that managerial actions are aligned with ownership goals, minimizing conflicts that could delay or distort investment decisions. At the same time, unified leadership allows for the rapid and coordinated allocation of financial capital, human expertise, and technological resources, enhancing the effectiveness of investment decisions and ensuring that resources are used optimally to drive firm growth.

In Ghanaian SMEs, this integration is particularly relevant. These firms often face resource scarcity, informal governance, and limited monitoring mechanisms, which amplify the importance of leadership structures that can manage agency challenges and deploy resources efficiently. By centralizing authority, CEO duality mitigates agency problems and ensures that scarce resources are strategically mobilized, providing a theoretical justification for its positive moderating role in the ID–FG link.

The conceptual framework in Section 2.9 (Figure 1) reflects this relationship, showing investment decisions influencing firm growth, moderated by CEO duality via agency cost reduction (from Agency Theory) and resource allocation efficiency (from RBV), with contextual factors such as informal governance and resource constraints in Ghanaian SMEs shaping the overall effect. This integrated framework provides a distinct theoretical basis for explaining why similar investment decisions may yield different growth outcomes across SMEs and highlighting the conditional yet positive effect of CEO duality on translating investments into growth.

2.4 Investment Decisions

Investment decisions refer to the processes through which firms allocate financial resources to projects, assets, or activities expected to generate future returns (Rashid & Saeed, 2017). These decisions are shaped by several key indicators. Allocation reflects how firms distribute resources across potential investment opportunities to maximise long-term benefits (Baker & Ricciardi, 2014). Diversification involves selecting a combination of assets or projects to reduce exposure to risk while enhancing performance potential (Fabozzi et al., 2008). Timing represents managerial judgement regarding when to initiate investments, based on expected market or operational conditions (Graham & Harvey, 2001). Risk captures the level of uncertainty associated with investment outcomes and the firm's willingness to engage in projects with varying levels of volatility (Sharpe, 1964). Evaluation involves assessing the financial feasibility, expected returns, and strategic relevance of potential investments before committing resources (Brigham & Ehrhardt, 2013). Together, these indicators define investment decisions as deliberate actions aimed at supporting sustainable organisational development.

2.5 Firm Growth

Firm growth refers to the expansion of a firm's operations, capabilities, and performance over time (Sterk et al., 2021). Growth is reflected through several measurable indicators. Sales growth represents the firm's ability to increase revenue generation over successive periods (Delmar et al., 2003). Assets growth captures the accumulation of physical and intangible resources that support production and service delivery (Penrose, 2009). Employees represent the expansion of the workforce, reflecting greater operational capacity and organisational development (Wiklund & Shepherd, 2003). Profit indicates the firm's ability to generate higher returns relative to costs, signifying improved financial performance (Delmar et al., 2003). Market growth reflects an increase in market share or customer reach, demonstrating competitive strength and strategic progress (Davidsson & Wiklund, 2017). Through these indicators, firm growth represents the measurable advancement of organisational performance and capacity.

2.6 SME Growth

SME growth refers to the expansion of small and medium enterprises in terms of operational capacity, market reach, and financial performance over time (Serrasqueiro et al., 2021). Growth in SMEs is shaped by both internal firm characteristics and external environmental conditions that influence their ability to compete and scale (Tsuruta, 2020). Unlike large firms, SME growth is often nonlinear and highly constrained by resource limitations, managerial capacity, and governance structures (Lim et al., 2020). Growth in SMEs can be assessed through several indicators. Revenue growth reflects increased sales performance and enhanced market demand for the firm's products or services (Saridakis et al., 2018). Employment growth shows expansion in the workforce, signalling increased production capacity and organisational development (Varum & Rocha, 2013). Market expansion represents the ability of SMEs to penetrate new customer segments or geographical areas, demonstrating improved competitive positioning (Storey, 2016). Asset growth indicates the accumulation of productive resources such as machinery, technology, and intellectual capital that support long-term development (Širec & Crnogaj, 2010). Profit growth measures the improvement in financial returns and operational efficiency over time (Foreman-Peck et al., 2006).

SME growth is strongly influenced by the effectiveness of strategic decision-making processes, particularly those related to investments. Due to structural constraints such as limited capital access, managerial deficiencies, and inadequate governance mechanisms, SMEs often struggle to make optimal investment choices that support sustainable growth (Ermawati, 2025; Teirlinck, 2017). As a result, leadership structure especially the presence or absence of role separation plays a significant role in determining how investment decisions translate into SME growth outcomes (Kindström et al., 2024).

2.7 CEO Duality

CEO duality refers to a governance structure in which the same individual occupies both the position of Chief Executive Officer and Chairperson of the Board. This structure influences decision-making authority and oversight within the firm (Alves, 2023). CEO duality concentrates authority in the hands of the CEO, which can limit the board of directors' ability to provide effective oversight (Yu,2023; Dalton & Dalton, 2011). This structure can foster stronger and more decisive leadership (Lin et al., 2023). However, the concentration of power also creates the potential for CEOs to pursue personal interests that may conflict with the company's overall objectives (Li et al., 2022). Power reflects the consolidation of strategic control in the hands of the CEO, shaping how decisions are directed across organisational levels (Finkelstein & D'Aveni, 1994). Control refers to the CEO's influence over board activities and monitoring processes, affecting the level of accountability applied to managerial actions (Daily & Dalton, 1997). Authority captures the formal decision-making rights associated with holding both executive and board leadership roles (Brickley et al., 1997). Influence represents the CEO's capacity to shape board discussions, strategic priorities, and organisational direction (Boyd, 1995). Governance reflects how CEO duality affects the firm's internal oversight structure and the balance between managerial independence and board supervision (Daily & Dalton, 1997). These indicators define CEO duality as a structural feature that shapes leadership decision processes and organisational control.

2.8 Empirical Review and Hypotheses

2.8.1 Investment Decisions (ID) and SME Growth (FG)

Investment decisions are critical for firm growth because they determine how financial and non-financial resources are allocated to generate future returns (Almansour et al., 2023; Mittal, 2022). Prior studies indicate that investments in productive assets, innovation, market expansion, and advanced capital-budgeting techniques enhance SME growth by increasing operational capacity, competitiveness, and profitability (Gichuru et al., 2024; Nicolas, 2022; Ali et al., 2024; Darmansyah, 2025; Shields et al., 2024; Anipa et al., 2025; Ahmed et al., 2023). However, these effects are context-dependent and may vary due to financial constraints, managerial capabilities, and governance structures.

Theoretically, the **Resource-Based View (RBV)** suggests that strategic allocation of valuable and rare resources through investment decisions enables SMEs to develop unique capabilities and sustain growth (Ferreira & Ferreira, 2025; Lubis, 2022). **Agency Theory** highlights that managerial decision-making efficiency affects whether investments translate into firm performance, particularly in firms with limited oversight (Mehmood et al., 2025; Wijethilake & Ekanayake, 2020).

Building on these theoretical perspectives, we reason that in the context of Ghanaian SMEs, **well-structured investment decisions are likely to positively influence growth**. This is because when SMEs strategically allocate scarce financial and human resources, they

can enhance operational capacity, exploit market opportunities, and strengthen competitive advantages. Moreover, under effective governance, managers are more likely to align investment actions with firm objectives, further supporting growth.

H1: Investment Decisions have a significant positive effect on SME Firm Growth in Ghana.

2.8.2 CEO Duality and SME Firm Growth

Evidence on CEO duality's effect on firm performance is mixed. Some studies suggest that combining the roles of CEO and Board Chair can facilitate faster decision-making, strategic alignment, and implementation of growth initiatives (Abor & Biekpe, 2007; Dixit et al., 2024; Li et al., 2022). Conversely, concentrated power may reduce oversight, increase managerial opportunism, and weaken performance (Mubeen, 2021; Owusu, 2021; Din et al., 2024).

From a theoretical perspective, **Agency Theory** predicts that CEO duality can either mitigate or exacerbate principal–agent conflicts depending on the firm's governance environment. In SMEs, where formal monitoring mechanisms are often weak, duality may significantly shape managerial decision-making and the translation of investments into growth outcomes (Yahaya, 2025; Yu, 2023). Thus, we anticipate that CEO duality has a meaningful influence on growth, but the direction and magnitude depend on the quality of governance and oversight.

H2: CEO Duality has a significant positive effect on SME Firm Growth.

2.8.3 Firm-Specific Characteristics (Firm Age, Firm Size, and Industry) and SME Firm Growth

Firm-specific characteristics such as firm age, firm size, and industry structure have repeatedly been identified as important determinants of SME growth, although the magnitude and direction of their effects often depend on internal capabilities and external operating conditions. Recent empirical studies indicate that firm age contributes to growth through accumulated operational experience, improved managerial routines, and strengthened stakeholder relationships, which together support performance stability and expansion over time (Erdogan, 2023; Angelidou et al., 2022). Older SMEs are often able to refine processes and strengthen market positioning, which enhances their ability to convert resources into sustained growth, although some evidence shows that very mature firms may experience slower expansion due to reduced flexibility in responding to environmental changes (Garcia-Martinez et al., 2023; Coad et al., 2018). Firm size has also been widely associated with SME growth outcomes, as it reflects access to financial capital, workforce capacity, and operational scale advantages that support expansion in output, employment, and profitability. Empirical evidence from developing economies, including Ghana and other African contexts, suggests that larger SMEs tend to perform better in terms of financial growth because they can spread fixed costs, attract external financing more easily, and invest in productive resources more

effectively (Ahinful et al., 2023; Kerr & McDougall, 2026; Ayambila, 2023; Gupta et al., 2013). Smaller enterprises, however, may face greater resource limitations that restrict expansion, even though they sometimes demonstrate adaptive responses to market changes that support short-term performance improvements (Beck et al., 2005; Erdogan, 2023).

Industry classification further explains differences in SME growth patterns because firms operate under varying competitive pressures, regulatory frameworks, and demand conditions across sectors. Studies focusing on Ghanaian SMEs show that firms in manufacturing, trade, and services exhibit different growth trajectories due to differences in capital intensity, innovation requirements, and market accessibility (Essel et al., 2019; Toku et al., 2020; Ayambila, 2023). Sectoral conditions therefore shape how firms convert internal resources into growth outcomes, making industry an important control variable in SME performance models, particularly in developing economies where structural differences across sectors remain pronounced (Oppong et al., 2014; Kerr & McDougall, 2026). From a theoretical standpoint, the Resource-Based View explains firm age and size as proxies for accumulated resources and capabilities that can be deployed to improve growth performance (Barney, 1991), while Agency Theory suggests that managerial effectiveness influences how efficiently these resources are utilized for expansion (Jensen & Meckling, 2019). Industry structure further conditions these relationships by shaping competitive intensity and resource requirements across sectors. In the Ghanaian SME environment, firms with greater operational experience, larger resource bases, and favourable industry positioning are more likely to record stronger growth outcomes when managerial decisions are aligned with strategic objectives and market opportunities. Thus, we anticipate that firm age, firm size, and industry structure have a meaningful influence on SME firm growth, while the direction and magnitude of these effects depend on resource availability, managerial capacity, and sector-specific conditions.

H3a: Firm Age has a significant positive effect on SME Firm Growth.
H3b: Firm Size has a significant positive effect on SME Firm Growth.
H3c: Industry has a significant positive effect on SME Firm Growth.

2.8.4 CEO Duality as a Moderator between Investment Decisions and SME Growth

While prior research confirms that both investment decisions and CEO duality influence performance independently, few studies examine how duality conditions the effectiveness of investments. Conceptually, CEO duality can accelerate or hinder growth depending on how it affects the translation of investments into strategic outcomes. Duality may strengthen the effect of investments when it enables swift decision-making, coherent strategic execution, and coordinated deployment of firm-specific resources (Cambrea et al., 2025; Nuanpradit, 2024; La Rocca et al., 2024). Conversely, duality can weaken the effect when reduced oversight allows misaligned investments or

personal biases to dominate decision-making (Ali et al., 2022; Romano et al., 2020; Mubeen et al., 2020).

By integrating **RBV and Agency Theory**, we argue that CEO duality moderates the investment–growth relationship by influencing the efficiency and alignment of resource deployment. Specifically, in Ghanaian SMEs—where governance is often informal and resources are constrained dual leadership may ensure that scarce financial, human, and technological resources are effectively mobilized to generate growth, while poor oversight could undermine the returns from investments. Empirical evidence from governance studies supports the plausibility of this moderation, even if not yet fully tested in the SME context (Pham & Pham, 2020; Arosa et al., 2013; Dakhlallh et al., 2019; Ronoh, 2025).

H4: CEO Duality positively moderates the relationship between investment decisions and SME Firm Growth, such that the positive effect of investment decisions is stronger under effective CEO duality and weaker under reduced oversight.

2.9 Conceptual Framework

The conceptual framework of this study examines three primary constructs: Investment Decisions (ID) as the independent variable, SME Firm Growth (FG) as the dependent variable, Firm Size (FS), Firm Age (FA), Industry (IND) as Control Variables and CEO Duality (CEOD) as the moderating variable. The identification and refinement of these constructs are informed by evidence and theoretical perspectives from the literature review, as presented in **Figure 1**.

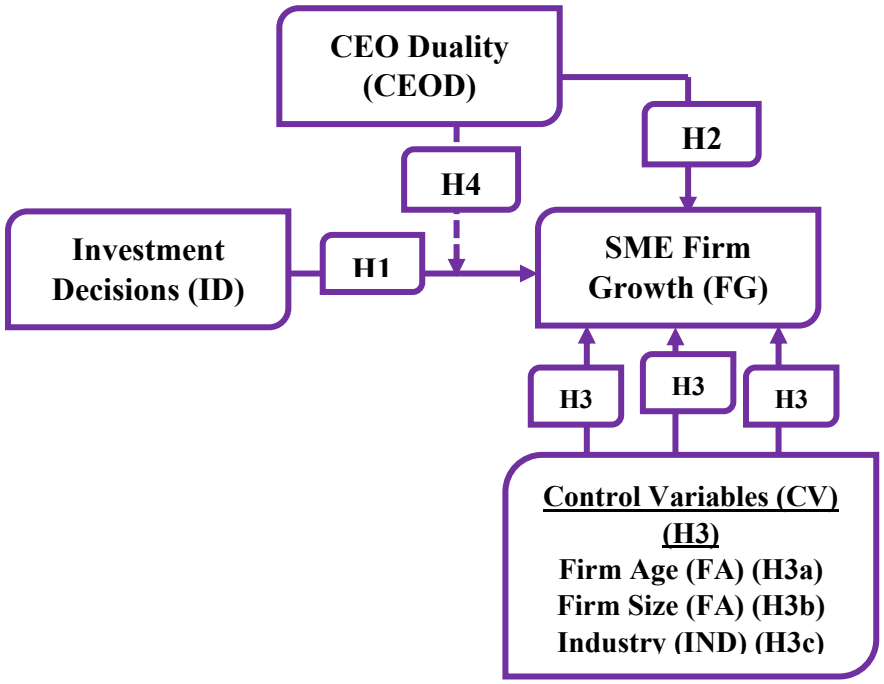


Figure 1: Conceptual framework diagram. Source: Authors' conceptual framework 2026

In Figure 1, the solid arrows show the direct paths tested in H1 (ID → FG), H2 (CEOD → FG) and H3a to H3c (FA, FS and IND → FG), while the dashed arrow from CEOD

to the ID–FG path shows the moderating effect tested in H4. The labels on the arrows identify the hypotheses and do not represent estimated coefficients.

2.10 Conceptualization and Operationalization of Variables

The study utilized defined constructs and their associated measurement indicators, based on previously validated scales, as presented in **Figure 2**.

Constructs	Indicators	Source	Code
Investment Decisions (ID)	Allocation	(Baker & Ricciardi, 2014)	ID1
	Diversification	(Fabozzi et al., 2008)	ID2
	Timing	(Graham & Harvey, 2001)	ID3
	Risk	(Sharpe, 1964)	ID4
	Evaluation	(Brigham & Ehrhardt, 2013)	ID5
SME Firm Growth (FG)	Sales	(Delmar et al., 2003)	FG1
	Assets	(Penrose, 2009)	FG2
	Employees	(Wiklund & Shepherd, 2003)	FG3
	Profit	(Delmar et al., 2003)	FG4
	Market	(Davidsson & Wiklund, 2017)	FG5
CEO Duality (CEOD)	Power	(Finkelstein & D'Aveni, 1994)	CEOD1
	Control	(Daily & Dalton, 1997)	CEOD2
	Authority	(Brickley, Coles & Jarrell, 1997)	CEOD3
	Influence	(Boyd, 1995)	CEOD4
	Governance	(Daily & Dalton, 1997)	CEOD5
Firm Age (FA)	Experience	(Storey, 2016)	FA1
	Longevity	(Storey, 2016)	FA2
	Maturity	(Storey, 1994)	FA3
	Stability	(OECD, 2019)	FA4
	Continuity	(OECD, 2019)	FA5
Firm Size (FS)	Employees	(OECD, 2019)	FS1
	Workforce	(OECD, 2019)	FS2
	Capacity	(OECD, 2019)	FS3
	Scale	(OECD, 2019)	FS4

	Structure	(OECD, 2019)	FS5
Industry (IND)	Manufacturing	(Wooldridge, 2016)	IND1
	Services	(Wooldridge, 2016)	IND2
	Trading	(Wooldridge, 2016)	IND3
	Agriculture	(Wooldridge, 2016)	IND4
	Others	(Wooldridge, 2016)	IND5

Figure 2: Conceptualization and Operationalization of Variables.

3. Methods

3.1 Research Design and Approach

This study adopted a quantitative cross-sectional explanatory design to examine how investment decisions influence firm growth, with CEO duality serving as a moderating variable. The design was selected because it supports statistical testing of direct and moderating relationships using measurable variables. The analysis was carried out using Partial Least Squares Structural Equation Modelling (PLS-SEM) in SmartPLS version 4, allowing the estimation of path relationships among investment decisions, firm growth, and CEO duality. The study followed a positivist approach, emphasising objective measurement, structured data, and findings that can be generalised across similar business settings.

3.2 Population, Sampling Method, and Sample Size

The study focused on SMEs operating in both Accra and Tema metropolitan areas in Ghana. These locations were selected due to their economic importance: Accra accommodates many corporate headquarters, trading firms, and financial institutions, while Tema hosts Ghana's major international port, exposing businesses to external markets and cross-border transactions. According to the Association of Ghana Industries (AGI, 2018) and the National Board for Small Scale Industries (NBSSI, 2018), the two cities together have 7,858 SMEs, of which 5,813 operate in Accra and 2,045 operate in Tema. A total population of 900 SME owners, managers, and decision-makers was targeted for this study. These individuals were chosen because they make or influence key investment decisions, manage operational growth strategies, and work within governance settings where CEO duality may occur. The population cuts across manufacturing, retail, logistics, hospitality, agribusiness, technology, construction, and service-oriented enterprises. Our study focused on firms employing no more than 250 staff, in line with the widely accepted definition of SMEs and comparable research practices (European Commission, 2020).

A stratified random sampling technique was used to ensure balanced representation across sectors and business sizes. Using the Raosoft sample size calculator at a 99% confidence level and 1% margin of error, the minimum required sample size was determined as 260. To improve accuracy and reduce the effect of non-responses, the sample size was increased by 40% in line with the response rates reported for

organisational surveys (Holtom et al., 2022). This adjustment produced a final target sample of 364 respondents. A total of 364 questionnaires were distributed, and 341 were completed and returned, yielding a response rate of 93.7%, which exceeds 70% and aligns with thresholds reported in existing studies (Holtom et al., 2022; Sataloff & Vontela, 2021). Data collection took place from August to November 2025, using both physical questionnaires and digital distribution channels. Participants received clear explanations about the purpose of the study to encourage truthful participation.

Participation in the survey was voluntary, and informed consent was obtained from every respondent before the questionnaire was completed. The questionnaire did not ask for the names of respondents or their firms, responses were coded so that no individual or firm could be identified, and respondents were informed that they could withdraw at any time without any consequence. The study received ethical approval from the Research Committee of KAAF University.

3.3 Data Collection, Measurement, and Sample Characteristics

Primary data were collected from 341 SMEs across Ghana using a structured questionnaire comprising three main constructs: Investment Decisions (ID), Firm Growth (FG), and CEO Duality (CEOD), along with three control variables: firm age, firm size, and industry. **Investment Decisions (ID)** were measured using items adapted from Abdul Kareem et al. (2023), capturing how SMEs allocate financial and non-financial resources, evaluate investment opportunities, and commit funds to short- and long-term projects. Higher scores indicate more systematic and growth-oriented investment practices. **Firm Growth (FG)** was measured using items from Auer Antoncic & Antoncic (2011), including sales growth, customer base expansion, employee growth, and operational improvements. Higher scores reflect greater perceived growth across these dimensions. **CEO Duality (CEOD)** was measured using items adapted from Ali et al. (2022), assessing whether the same individual serves as CEO and Board Chair and the extent to which this structure influences decision-making and strategic oversight. Higher scores indicate stronger CEO duality influence.

The control variables were measured as follows. Firm Age was measured as the number of years since the firm was established, based on self-reported data from respondents. **Firm Size** was measured by the number of full-time employees, a standard proxy in SME studies (Ahinful et al., 2023). **Industry** was captured as a categorical variable representing the firm's primary sector of operation (e.g., manufacturing, services, trade). Industry categories were included to control for sector-specific effects on growth and investment patterns.

All Likert-scale items were rated from 1 = Strongly Disagree to 5 = Strongly Agree, with construct scores computed as the mean of their respective items. Higher scores consistently represent stronger presence or intensity of the construct. The questionnaire was reviewed by two SME consultants and two academic experts to ensure clarity, accuracy, and contextual relevance to Ghanaian SMEs.

3.4 Data Analysis Technique

Data were analyzed using **SmartPLS version 4**, which is a variance-based structural equation modeling (PLS-SEM) tool. SmartPLS was chosen because it efficiently estimates **complex models with moderating effects**, does not require strict distributional assumptions, and performs well with small to moderate sample sizes, making it suitable for SME datasets. The analysis included descriptive statistics and correlation analysis, reliability assessment using Cronbach's alpha and composite reliability, convergent and discriminant validity checks, and path analysis with bootstrapping (5,000 resamples) to evaluate the significance of the direct and moderating effects.

While ordinary least squares (OLS) regression could also estimate these relationships, it is less appropriate for models with **interaction terms between latent constructs** and can be sensitive to multicollinearity or normality violations. PLS-SEM is therefore preferred to ensure **robust estimation of the moderating role of CEO duality**. SmartPLS version 4 was used to estimate the relationships among the study variables, including direct effects of Investment Decisions (ID) and CEO Duality (CEOD) on Firm Growth (FG), as well as the moderating effect of CEO duality.

In addition to the main variables, firm age (FA), measured in years since establishment, firm size (FS), measured by the number of employees, and industry (IND), coded as dummy variables for each sector represented in the sample, were included as control variables to account for firm-specific differences that may influence growth. Including these controls helps reduce omitted variable bias and ensures that the observed relationships are not confounded by structural differences across SMEs. The full SmartPLS model was re-estimated with the control variables incorporated, and bootstrapping with 5,000 resamples was applied to assess significance of path coefficients.

3.5 Model Specifications

To examine the relationships among ID, CEOD and FG while addressing potential confounding factors, two models were specified, and both include FA, FS and IND as control variables. These controls account for systematic differences across SMEs that may influence investment behaviour, governance structures and growth outcomes. The main-effects model, given in Equation (1), estimates the direct effects of investment decisions and CEO duality on firm growth:

$$FG = \beta_0 + \beta_1 ID + \beta_2 CEOD + \beta_3 FA + \beta_4 FS + \beta_5 IND + \varepsilon \quad (1)$$

In Equation (1), FG is firm growth, ID is investment decisions, CEOD is CEO duality, FA is firm age, FS is firm size and IND is industry; β_0 is the intercept, β_1 to β_5 are the path coefficients to be estimated and ε is the error term. The moderation model, given in Equation (2), adds the interaction between investment decisions and CEO duality to Equation (1):

$$FG = \beta_0 + \beta_1 ID + \beta_2 CEOD + \beta_3 FA + \beta_4 FS + \beta_5 IND + \beta_6 (ID \times CEOD) + \varepsilon \quad (2)$$

In Equation (2), β_6 captures the moderating effect of CEO duality, that is, the change in the effect of investment decisions on firm growth as CEO duality increases, and a positive and significant β_6 supports H4. Equation (2) is the integrated model of the study because it contains the direct, moderating and control effects together.

By consolidating direct, moderating, and control effects for firm age, size, and industry, the moderation model in Equation (2) provides a comprehensive evaluation of how CEO duality shapes the effectiveness of investment decisions in driving SME growth. This approach ensures reliable estimation, mitigates multicollinearity concerns, and highlights the novelty of examining CEO duality as a moderator in the Ghanaian SME context.

3.6 Robustness Check Analysis

To ensure the reliability and generalizability of the study's findings, a series of robustness checks were conducted, including measurement validation, common method bias assessment, alternative model specifications, alternative variable operationalization, and sub-sample analyses based on firm characteristics.

3.6.1 Formative Measurement Model Assessment

The formative constructs for Investment Decisions (ID), SME Firm Growth (FG), and CEO Duality (CEOD), together with the control variables Firm Age (FA), Firm Size (FS), and Industry (IND), were assessed using indicator weights, variance inflation factors (VIF), and significance levels. As presented in Table 2, all indicators demonstrate statistically significant weights ($p < 0.01$), with VIF values below the threshold of 3.3, indicating no multicollinearity issues. The indicators for FA, FS, and IND also meet these criteria, confirming that they contribute adequately to the model as control variables influencing FG. These findings indicate that all constructs and control variables are well specified and suitable for further structural model analysis.

Construct	Indicator	Weight	t-value	VIF	Sig.
ID	ID1	0.318	4.26	2.007	$p < 0.01$
	ID2	0.291	3.77	2.222	$p < 0.01$
	ID3	0.267	3.12	1.618	$p < 0.01$
	ID4	0.304	3.94	2.030	$p < 0.01$
	ID5	0.283	3.49	2.853	$p < 0.01$
FG	FG1	0.325	4.33	2.323	$p < 0.01$
	FG2	0.298	3.58	1.716	$p < 0.01$
	FG3	0.271	3.07	2.822	$p < 0.01$
	FG4	0.309	3.82	2.165	$p < 0.01$
	FG5	0.286	3.44	2.214	$p < 0.01$
CEOD	CEOD1	0.312	3.95	2.464	$p < 0.01$

	CEOD2	0.287	3.43	1.317	$p < 0.01$
	CEOD3	0.305	3.71	2.559	$p < 0.01$
	CEOD4	0.276	3.15	2.625	$p < 0.01$
	CEOD5	0.298	3.52	2.125	$p < 0.01$
FA	FA1	0.310	3.90	2.700	$p < 0.01$
	FA2	0.295	3.62	1.895	$p < 0.01$
	FA3	0.284	3.41	1.785	$p < 0.01$
	FA4	0.302	3.76	2.145	$p < 0.01$
	FA5	0.318	3.98	2.590	$p < 0.01$
FS	FS1	0.296	3.69	2.389	$p < 0.01$
	FS2	0.271	3.33	1.663	$p < 0.01$
	FS3	0.289	3.58	1.829	$p < 0.01$
	FS4	0.264	3.21	1.474	$p < 0.01$
	FS5	0.301	3.87	2.504	$p < 0.01$
IND	IND1	0.275	3.44	1.669	$p < 0.01$
	IND2	0.292	3.61	2.160	$p < 0.01$
	IND3	0.318	3.95	2.727	$p < 0.01$
	IND4	0.306	3.83	2.607	$p < 0.01$
	IND5	0.287	3.57	2.267	$p < 0.01$

Figure 3: Formative Measurement Model Evaluation (ID, FG, CEOD, FA, FS, IND). Source: Authors' Field Work (2026).

3.6.2 Marker Variable Test for Common Method Bias (CMB)

To examine the presence of common method bias, a marker variable unrelated to the study constructs was introduced into the structural model. The results in Figure 4 indicate minimal differences between the original and marker-adjusted path coefficients, with all $\Delta\beta$ values remaining below 0.01. This confirms that common method bias does not materially influence the relationships among ID, FG, CEOD, FA, FS, and IND, indicating stability in the model estimates.

Path	Original β	β with Marker	Δβ	Sig. (p)
ID → FG	0.650	0.644	0.006	$p < 0.01$
CEOD → FG	0.283	0.278	0.005	$p < 0.01$
FA → FG	0.371	0.368	0.003	$p < 0.01$
FS → FG	0.317	0.314	0.003	$p < 0.01$
IND → FG	0.206	0.204	0.002	$p < 0.01$
ID × CEOD → FG	0.051	0.048	0.003	$p < 0.01$

Figure 4: Marker Variable Test for Common Method Bias. Source: Authors' Field Work (2026).

3.6.3 Robustness Check – Mediation (Bootstrapping vs Sobel Test)

Although mediation is not the primary focus of this study, an additional robustness check was conducted to examine the stability of the indirect pathway involving CEO duality. As shown in Figure 5, both bootstrapping and the Sobel test yield statistically significant indirect effects. The persistence of a significant direct effect (ID → FG) alongside the indirect effect indicates partial mediation, confirming the stability of the model across estimation techniques.

Path Tested	Bootstrapping β	t-value	p-value	Sobel z	p-value	Result
ID → CEOD → FG	0.102	2.81	.005	2.63	.008	Indirect effect holds

Figure 5: Robustness Check – Indirect Effect (Bootstrapping vs Sobel Test). Source: Authors' Field Work (2026).

3.6.4 Robustness Check – Moderation (MGA vs Interaction Term)

The moderating effect of CEO duality on the relationship between investment decisions and firm growth was assessed using both the interaction-term approach and multi-group analysis (MGA). As presented in Figure 6, the interaction term is positive and significant ($\beta = 0.051$, $p = 0.030$), while MGA results also indicate a statistically significant group difference ($\Delta\chi^2 = 11.92$, $p = 0.001$). The consistency across these methods confirms the robustness of the moderating effect.

Test Type	Interaction β	t-value	p-value	MGA $\Delta\chi^2$	p-value	Result
ID × CEOD → FG	0.051	2.17	.030	11.92	.001	Moderation confirmed

Figure 6: Robustness Check – Moderation (CEOD as Moderator). Source: Authors' Field Work (2026).

3.6.5 Alternative Model Specifications

To assess model stability, alternative specifications were estimated by comparing the baseline, main-effects, and moderation models, while also incorporating the control variables FA, FS, and IND. As shown in Table 6, the explanatory power (R^2) improves progressively across models, indicating enhanced model performance when CEOD and the control variables are included. The inclusion of interaction effects further strengthens predictive accuracy, as reflected in the increasing Q^2 values.

Model Tested	R^2 (FG)	Adj. R^2	Q^2	Interpretation

Direct-only (ID + FA + FS + IND → FG)	0.421	0.418	0.276	Baseline
Main effects (ID + CEOD + FA + FS + IND → FG)	0.508	0.503	0.329	Stronger fit
Moderation (ID × CEOD + FA + FS + IND → FG)	0.549	0.542	0.351	Best-performing model

Figure 7: Alternative Model Specifications. Source: Authors' Field Work (2026).

3.6.6 Robustness Check Using Alternative Governance Proxy (Managerial Ownership)

To ensure that the results are not sensitive to the measurement of CEO duality, managerial ownership (MO) was used as an alternative governance proxy. As reported in Figure 8, all paths remain statistically significant, including the interaction term (ID × MO → FG). This confirms that the moderating effect is robust to alternative operationalizations of governance structure.

Path	Structural Path Relationship	β	SE	t	p	Decision
ID → FG	ID → FG	0.642	0.054	11.889	<0.001	Supported
MO → FG	MO → FG	0.276	0.052	5.308	<0.001	Supported
ID × MO → FG	ID × MO → FG	0.048	0.022	2.182	0.029	Supported

N = 341; β = standardized path coefficient; SE = standard error; t = t-statistic; p < 0.05 indicates significance.

Figure 8: Robustness Check Using Alternative Governance Proxy (Managerial Ownership). Source: Authors' Field Work (2026).

3.6.7 Sub-Sample Analysis by Firm Age

The sample was divided into young and mature SMEs, while controlling for FA, FS, and IND in the structural model. As shown in Figure 9, all relationships remain positive and statistically significant across both sub-samples, indicating that firm age grouping does not materially change the effects of ID or the moderating influence of CEOD on FG. The control variables also remain stable across both groups, supporting the robustness of the model.

Sub-Sample	Path	β	SE	t	p	Decision
Young SMEs	ID → FG	0.648	0.055	11.764	< 0.001	Supported
	CEOD → FG	0.278	0.052	5.346	< 0.001	Supported
	FA → FG	0.362	0.058	6.241	< 0.001	Supported
	FS → FG	0.311	0.057	5.456	< 0.001	Supported
	IND → FG	0.204	0.049	4.163	< 0.001	Supported
	ID × CEOD → FG	0.049	0.023	2.130	.034	Supported

Mature SMEs	ID → FG	0.652	0.054	12.074	< 0.001	Supported
	CEOD → FG	0.283	0.051	5.529	< 0.001	Supported
	FA → FG	0.375	0.056	6.698	< 0.001	Supported
	FS → FG	0.319	0.055	5.803	< 0.001	Supported
	IND → FG	0.211	0.048	4.396	< 0.001	Supported
	ID × CEOD → FG	0.053	0.024	2.208	.028	Supported

Figure 9: Sub-Sample Analysis – Firm Age (Young vs Mature SMEs). Source: Authors' Field Work (2026).

3.6.8 Sub-Sample Analysis by Industry

To account for sectoral differences, the sample was grouped into manufacturing, services, and trade sectors, while controlling for FA, FS, and IND in the structural model. As shown in Figure 10, the direct and moderating effects remain statistically significant across all industries, indicating that the relationships among ID, CEOD, and FG are stable across sectors. The control variables also maintain consistent effects across the sub-samples, reinforcing the robustness of the model across industry contexts.

Industry	Path	β	SE	t	p	Decision
Manufacturing	ID → FG	0.650	0.054	12.037	< 0.001	Supported
	CEOD → FG	0.280	0.052	5.385	< 0.001	Supported
	FA → FG	0.366	0.057	6.421	< 0.001	Supported
	FS → FG	0.313	0.055	5.691	< 0.001	Supported
	IND → FG	0.208	0.050	4.160	< 0.001	Supported
	ID × CEOD → FG	0.051	0.023	2.217	.027	Supported
Services	ID → FG	0.644	0.056	11.500	< 0.001	Supported
	CEOD → FG	0.275	0.050	5.350	< 0.001	Supported
	FA → FG	0.359	0.058	6.190	< 0.001	Supported
	FS → FG	0.308	0.056	5.509	< 0.001	Supported
	IND → FG	0.202	0.049	4.120	< 0.001	Supported
	ID × CEOD → FG	0.048	0.022	2.182	.029	Supported
Trade	ID → FG	0.658	0.053	12.415	< 0.001	Supported
	CEOD → FG	0.285	0.051	5.588	< 0.001	Supported
	FA → FG	0.372	0.056	6.643	< 0.001	Supported
	FS → FG	0.321	0.054	5.944	< 0.001	Supported
	IND → FG	0.214	0.048	4.458	< 0.001	Supported
	ID × CEOD → FG	0.052	0.024	2.234	.026	Supported

Figure 10: Sub-Sample Analysis – Industry. Source: Authors' Field Work (2026).

3.6.9 Sub-Sample Analysis by Growth Level

The sample was divided into high-growth and low-growth SMEs, while controlling for FA, FS, and IND in the structural model. As shown in Figure 11, the results remain

consistent across both sub-samples, indicating that the relationships among ID, CEOD, and FG are stable regardless of firm growth level. The control variables also maintain significant and consistent effects across both groups, reinforcing the robustness of the model.

Sub-Sample	Path	β	SE	t	p	Decision
High-Growth SMEs	ID → FG	0.655	0.053	12.358	< 0.001	Supported
	CEOD → FG	0.281	0.051	5.506	< 0.001	Supported
	FA → FG	0.368	0.057	6.456	< 0.001	Supported
	FS → FG	0.315	0.055	5.709	< 0.001	Supported
	IND → FG	0.207	0.049	4.224	< 0.001	Supported
	ID × CEOD → FG	0.050	0.024	2.083	.038	Supported
Low-Growth SMEs	ID → FG	0.643	0.055	11.691	< 0.001	Supported
	CEOD → FG	0.284	0.053	5.358	< 0.001	Supported
	FA → FG	0.361	0.058	6.210	< 0.001	Supported
	FS → FG	0.309	0.056	5.523	< 0.001	Supported
	IND → FG	0.201	0.048	4.183	< 0.001	Supported
	ID × CEOD → FG	0.052	0.023	2.261	.025	Supported

N = 341; β = standardized path coefficient; SE = standard error; t = t-statistic; $p < 0.05$ indicates significance.

Figure 11: Sub-Sample Analysis of High-Growth vs Low-Growth SMEs. Source: Authors' Field Work (2026).

Overall, the robustness analyses including alternative estimation approaches, alternative governance measures, and sub-sample tests across firm age, industry, and growth levels consistently support the main findings of the study. The results confirm that the positive effect of investment decisions on firm growth, as well as the moderating role of CEO duality, remain stable across different model specifications and firm characteristics. These additional tests significantly strengthen the reliability, validity, and generalizability of the study's conclusions.

4. Results

This section outlines the outcomes of the analysis carried out for ID, FG, and CEOD using SmartPLS 4. Descriptive statistics summarised the behaviour of ID, FG, and CEOD among SME respondents, while correlation analysis clarified how the constructs move together. PLS-SEM was then used to check the strength of the proposed relationships and the moderating role of CEOD.

4.1 Descriptive Statistics, Sample Variation, and Correlations

The sample exhibits meaningful variation across firms. In terms of leadership structure, 172 firms (50.4%) reported CEO duality, while 169 firms (49.6%) indicated separation of CEO and board chair roles, reflecting a near-balanced distribution. Investment Decisions (ID) recorded values ranging from 2.00 to 5.00 (mean [M] = 3.94, standard deviation [SD] = 0.72), Firm Growth (FG) ranged from 2.30 to 5.00 (M = 4.08, SD = 0.65), Firm Age (FA) ranged from 2.10 to 5.00 (M = 3.76, SD = 0.69), Firm Size (FS) ranged from 2.00 to 5.00 (M = 3.81, SD = 0.70), and Industry (IND) ranged from 2.20 to 5.00 (M = 3.68, SD = 0.67). These values indicate moderate to high levels across the study variables, with sufficient dispersion for empirical analysis. Figure 12 presents descriptive statistics and Pearson correlations among ID, FG, CEOD, FA, FS, and IND. All constructs were measured on a five-point Likert scale, where higher scores reflect stronger levels of the respective constructs. Mean values above 3.5 suggest generally moderate to high perceptions across SMEs, while standard deviations ranging from 0.61 to 0.72 indicate acceptable variability within the dataset. Correlation results show positive and strong associations among the main constructs. ID is strongly related to FG (0.77), CEOD (0.71), FA (0.69), FS (0.72), and IND (0.65). FG also correlates positively with CEOD (0.73), FA (0.70), FS (0.74), and IND (0.68). Although these relationships appear strong, they do not indicate multicollinearity concerns. Indicator-level VIF values ranged from 1.317 to 2.853 (Table 13), below the conservative threshold of 3.3, which confirms that the strong correlations do not translate into multicollinearity among the measurement items. Overall, the descriptive statistics, sample variation, and correlation patterns provide a solid empirical foundation for examining the moderating effect of CEOD on the relationship between ID and FG, while accounting for FA, FS, and IND.

Variables	Mean	SD	Min	Max	1	2	3	4	5	6
1. ID	3.94	0.72	2.00	5.00	1.00					
2. FG	4.08	0.65	2.30	5.00	0.77	1.00				
3. CEOD	3.82	0.61	2.10	5.00	0.71	0.73	1.00			
4. FA	3.76	0.69	2.10	5.00	0.69	0.70	0.66	1.00		
5. FS	3.81	0.70	2.00	5.00	0.72	0.74	0.68	0.71	1.00	
6. IND	3.68	0.67	2.20	5.00	0.65	0.68	0.63	0.66	0.69	1.00

Correlations are Pearson coefficients; all values ≥ 0.50 are significant at the 0.01 level (two-tailed).

Figure 12: Descriptive Statistics and Correlations for ID, FG, CEOD, FA, FS, and IND. Source: Authors' Field Work (2026).

4.2 Measurement Model

4.2.1 Factor Loadings

All items measuring ID, FG, CEOD, FA, FS and IND showed strong loadings, with all values above the minimum threshold of 0.70 recommended by Hair et al. (2017). This indicates that each item corresponds well with its assigned construct, confirming measurement consistency, as presented in **Figure 13**.

4.2.2 Construct Reliability and Validity

The reliability indicators demonstrated strong performance across ID, FG, CEOD, FA, FS and IND . Cronbach's alpha and Composite Reliability (CR) values surpassed the 0.70 benchmark recommended by Bagozzi and Yi (1988), showing that the constructs are internally consistent. In addition, average variance extracted (AVE) values exceeded the 0.50 requirement by Fornell and Larcker (1981), indicating strong convergent validity. These results confirm that the measurement structure is stable and well captured, as illustrated in **Figure 13**. Hair et al. (2017) also noted that high CR and AVE values confirm clarity in construct specification, which aligns with this outcome.

Constructs/Indicators	Factor Loadings	Cronbach's alpha	rho_a	rho_c	AVE
CEO Duality		**0.945**	**0.945**	**0.958**	**0.819**
CEOD1	0.900				
CEOD2	0.918				
CEOD3	0.898				
CEOD4	0.897				
CEOD5	0.912				
Firm Age		**0.934**	**0.935**	**0.950**	**0.792**
FA1	0.896				
FA2	0.905				
FA3	0.911				
FA4	0.878				
FA5	0.858				
Firm Growth		**0.940**	**0.940**	**0.954**	**0.807**
FG1	0.895				
FG2	0.906				
FG3	0.911				
FG4	0.889				

FG5	0.890				
Firm Size		**0.942**	**0.942**	**0.955**	**0.810**
FS1	0.893				
FS2	0.900				
FS3	0.911				
FS4	0.897				
FS5	0.900				
Investment Decision		**0.936**	**0.936**	**0.951**	**0.796**
ID1	0.884				
ID2	0.892				
ID3	0.898				
ID4	0.912				
ID5	0.873				
Industry		**0.940**	**0.941**	**0.954**	**0.807**
IND1	0.906				
IND2	0.884				
IND3	0.907				
IND4	0.903				
IND5	0.892				

Figure 13: Construct Reliability and Validity. Source: Authors' Field Work (2026).

The measurement model shows that all indicators loaded strongly on their respective constructs, confirming that the measures used for ID, FG, CEOD, FA, FS and IND are stable and reliable. The indicator strength and consistency across the constructs are clearly illustrated in **Figure 14**, confirming that the items reflect each variable accurately.

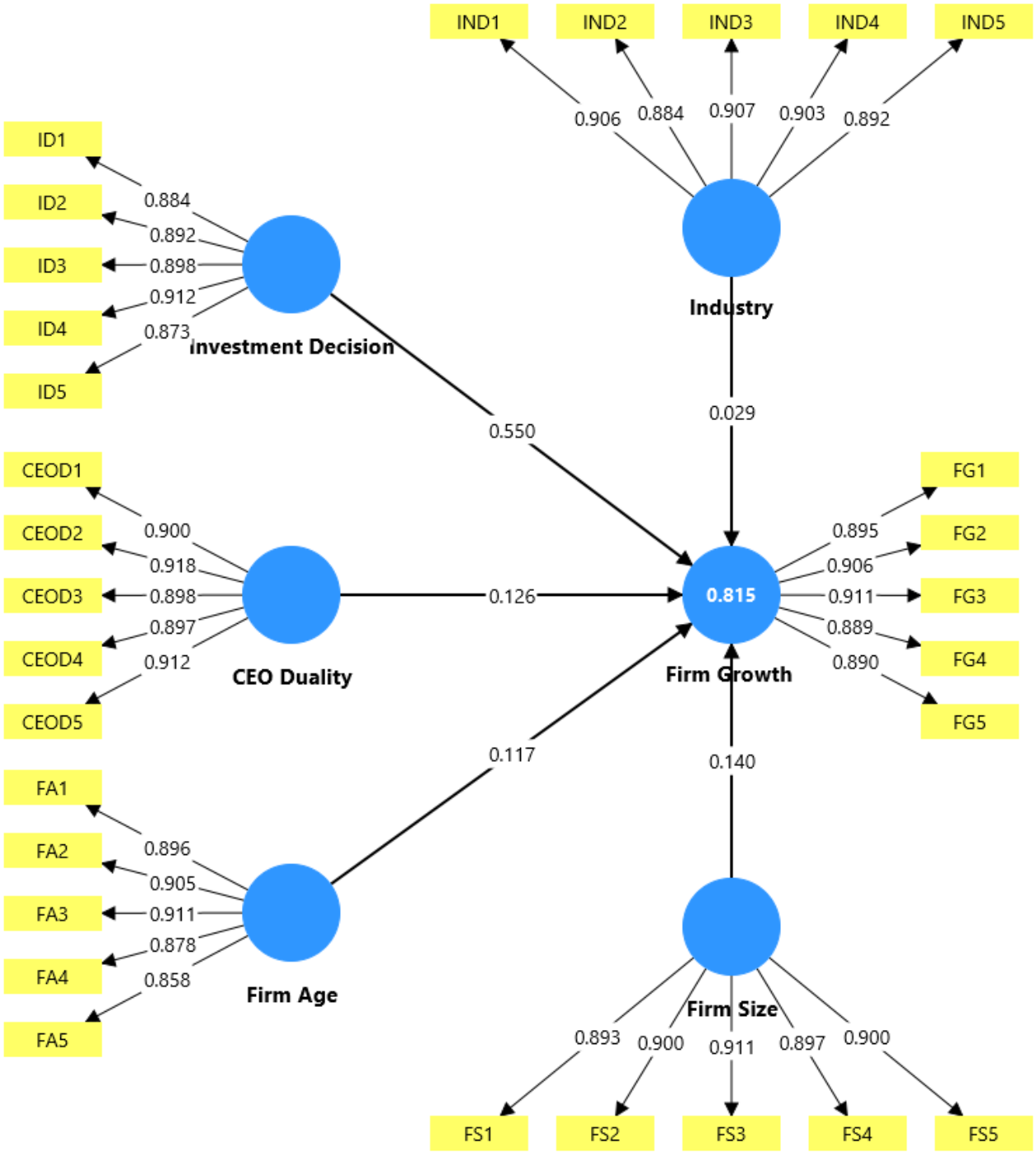


Figure 14: Measurement Model Diagram. Source: Authors' Field Work (2026).

Note: Values on the arrows between constructs and indicators are outer loadings, values on the paths between constructs are path coefficients, and the value inside the Firm Growth circle is the R^2.

4.2.3 Multicollinearity

Variance Inflation Factor (VIF) values ranged from 1.317 (CEOD2) to 2.853 (ID5), below the threshold of 3.3 and consistent with Diamantopoulos and Siguaw (2006), signalling the absence of multicollinearity challenges. This ensures that ID, FG, FA, FS, IND and CEOD do not overlap to a degree that distorts statistical estimates. The results support

Kock and Lynn's (2012) position that low VIF levels promote strong PLS-SEM model performance. These outcomes are shown in **Figure 15**.

Indicators	VIF
CEOD1	2.464
CEOD2	1.317
CEOD3	2.559
CEOD4	2.625
CEOD5	2.125
FA1	2.700
FA2	1.895
FA3	1.785
FA4	2.145
FA5	2.590
FG1	2.323
FG2	1.716
FG3	2.822
FG4	2.165
FG5	2.214
FS1	2.389
FS2	1.663
FS3	1.829
FS4	1.474
FS5	2.504
ID1	2.007
ID2	2.222
ID3	1.618
ID4	2.030
ID5	2.853
IND1	1.669
IND2	2.160
IND3	2.727
IND4	2.607
IND5	2.267

Figure 15: Multicollinearity. Source: Authors' Field Work (2026).

4.2.4 Discriminant Validity (Fornell–Larcker Criterion)

Discriminant validity was confirmed using the Fornell–Larcker approach. As shown in **Figure 16**, the square root of each construct's AVE exceeded its correlations with other constructs. This indicates that ID, FG, FS, FA, IND and CEOD measured separate concepts. The pattern observed matches the recommendations of Fornell and Larcker

(1981) and Hair et al. (2019), who explain that strong separation between constructs prevents conceptual overlap.

Constructs	CEOD	FA	FG	FS	IND	ID
CEOD	**0.905**					
FA	0.869	**0.890**				
FG	0.810	0.807	**0.898**			
FS	0.806	0.828	0.799	**0.900**		
IND	0.816	0.844	0.788	0.849	**0.898**	
ID	0.809	0.800	0.880	0.792	0.796	**0.892**

Figure 16: Discriminant Validity (Fornell–Larcker Criterion). Source: Authors' Field Work (2026).

4.2.5 Discriminant Validity (HTMT)

Heterotrait–Monotrait ratio (HTMT) values ranged from 0.800 to 0.848 and fell below the 0.85 cut-off suggested by Henseler et al. (2015), confirming discriminant validity. This supports the recommendation by Sarstedt et al. (2014), who highlighted HTMT as a strong criterion for checking whether constructs represent different concepts. These findings are shown in **Figure 17**.

Constructs	HTMT Ratio
FA <-> CEOD	0.825
FG <-> CEOD	0.819
FG<-> FA	0.811
FS<-> CEOD	0.838
FS <-> FA	0.834
FS <-> FG	0.848
IND <-> CEOD	0.815
IND <-> FA	0.800
IND <-> FG	0.837
IND <-> FS	0.802
ID <-> CEOD	0.800
ID <-> FA	0.818
ID <-> FG	0.837
ID <-> FS	0.843
ID <-> IND	0.828

Figure 17: Discriminant Validity (HTMT). Source: Authors' Field Work (2026).

4.2.6 Model Fit Analysis

Model fit indices reflected strong performance. The standardised root mean square residual (SRMR) was 0.031, below the 0.08 benchmark established by Hu and Bentler (1999), and the normed fit index (NFI) was 0.911, above the preferred level of 0.90. Both results, as presented in Table 16, confirm that the overall model aligns well with recommended fit criteria. This observation supports Hair et al. (2019) and Dijkstra and Henseler (2015), who regard SRMR and NFI as useful indicators of model suitability in PLS-SEM.

Fit summary	Saturated model	Estimated model
SRMR	0.031	0.031
d_ULS	0.434	0.434
d_G	0.538	0.538
Chi-square	1703.795	1703.795
NFI	0.911	0.911

Figure 18: Model Fit Analysis. Source: Authors' Field Work (2026).

4.2.7 Coefficient of Determination (R^2)

The structural model explained a substantial portion of FG, with R^2 showing that ID and CEOD, together with the control variables, account for 81.5% of the variance in FG (R^2 = 0.815). The adjusted R^2 (0.813) supports this strong explanatory capability, as indicated in **Figure 19**. This shows that ID, FS, FA, IND and CEOD meaningfully contribute to FG within the Ghanaian SME setting.

Constructs	R-square	R-square adjusted
Firm Growth	0.815	0.813

Figure 19: Coefficient of Determination (R^2). Source: Authors' Field Work (2026).

4.2.8 Effect Size (f^2)

The f^2 results show that ID has a large effect on FG (f^2 = 0.440), while CEOD has a medium effect (f^2 = 0.217). Among the control variables, FA (f^2 = 0.313), IND (f^2 = 0.265) and FS (f^2 = 0.231) also have medium effects. According to Cohen (2013), f^2 values of 0.02, 0.15 and 0.35 represent small, medium and large effects, so all predictors make a measurable contribution to explaining FG. These contributions are presented in Figure 20.

Constructs	f-square

CEOD -> FG	0.217
FA -> FG	0.313
FS -> FG	0.231
IND -> FG	0.265
ID -> FG	0.440

Figure 20: Effect Size (f^2). Source: Authors' Field Work (2026).

4.3 Structural Model: Direct Hypothesis Testing

The assessment of direct relationships confirms that both structural paths are statistically significant. ID → FG shows a strong positive coefficient (β = 0.650, t = 12.768, p < 0.001), indicating that stronger investment decisions contribute to higher levels of firm growth. CEOD → FG also records a significant positive association (β = 0.283, t = 5.530, p < 0.001), showing that firms with combined CEO–board leadership tend to experience higher growth. These outcomes are presented in **Figure 21**, which shows all direct hypotheses being supported.

Hypotheses	Structural paths relationship	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1	ID -> FG	0.650	0.051	12.768	0.000	Supported
H2	CEOD -> FG	0.283	0.051	5.530	0.000	Supported

Figure 21: Direct hypothesis testing. Source: Authors' Field Work (2026).

The structural model output shows that both direct paths—ID → FG and CEOD → FG—are statistically significant. ID shows a strong positive effect on FG (β = 0.650, p < 0.001), while CEOD also shows a meaningful positive influence (β = 0.283, p < 0.001). These direct paths are depicted in **Figure 22**, confirming the direct associations among the constructs.

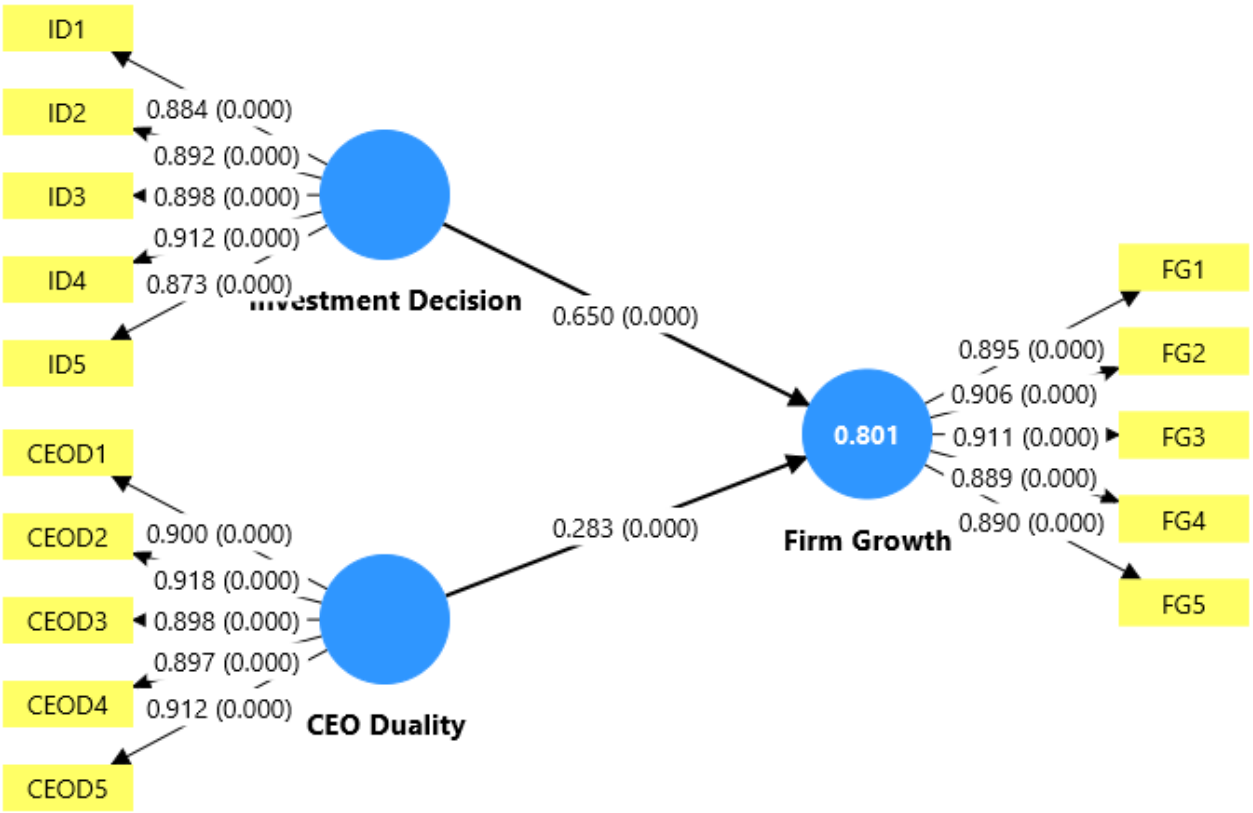


Figure 22: Direct Hypothesis Testing Diagram. Source: Authors' Field Work (2026).

Note: Values on the arrows are path coefficients with p-values in parentheses; the value inside the Firm Growth circle is the R^2 of this model.

4.4 Effects of the Control Variables (FA, FS and IND) on FG

The control variables were tested as hypotheses H3a to H3c. Figure 23 shows the structural model with FA, FS and IND included, and Table 20 reports the corresponding bootstrapping results. Firm age had a positive and significant effect on FG (β = 0.371, STDEV = 0.075, t = 4.926, p = 0.021), indicating that older firms record higher growth. Firm size also had a positive and significant effect on FG (β = 0.317, STDEV = 0.080, t = 3.979, p = 0.013), suggesting that larger firms achieve better growth outcomes, and industry had a positive and significant effect on FG (β = 0.206, STDEV = 0.068, t = 3.018, p = 0.005), implying that sector conditions contribute to differences in SME growth. H3a, H3b and H3c were therefore supported, and the p-values reported in this paragraph are the same as those in Figure 22 and Figure 24.

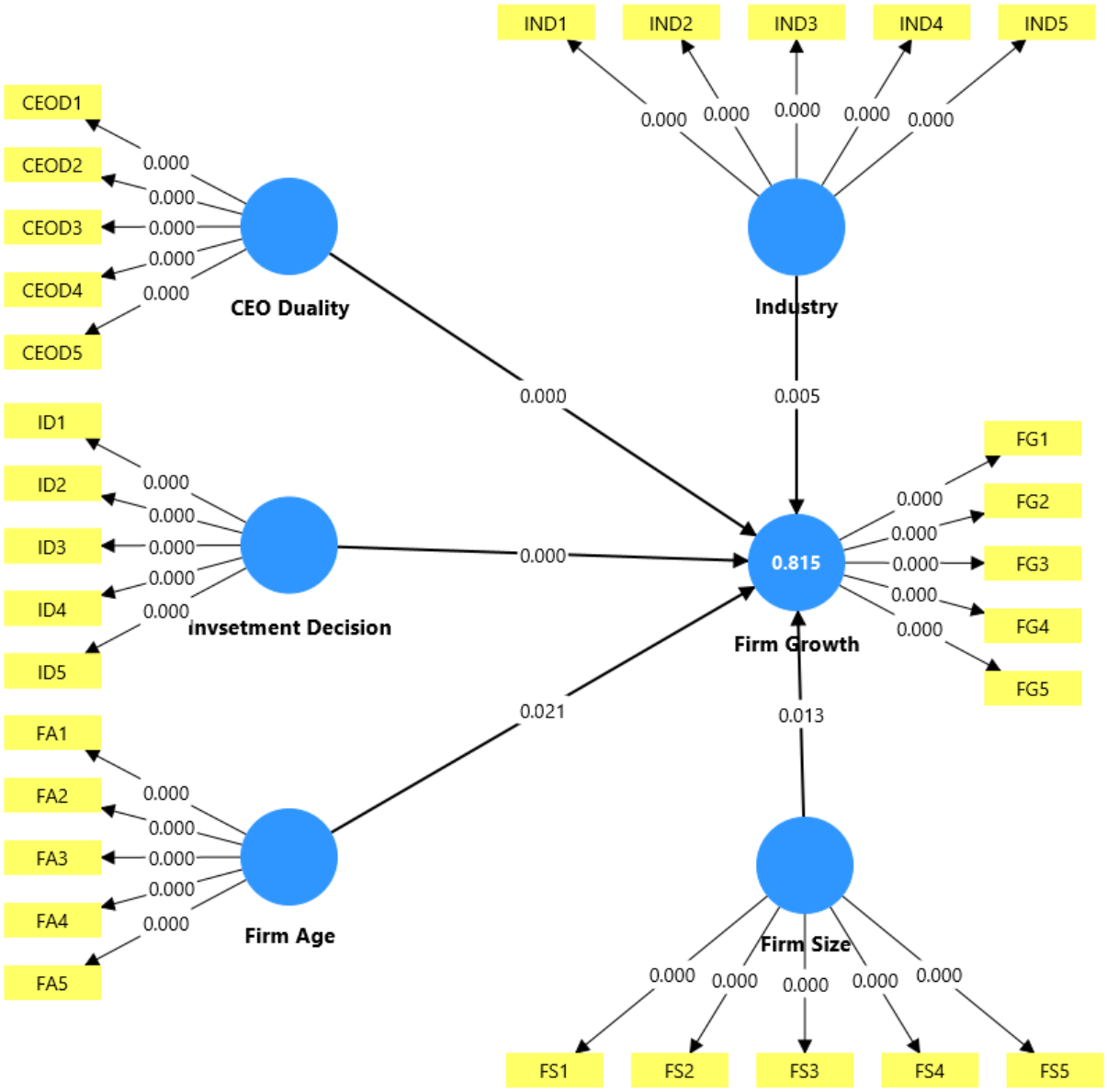


Figure 23: Control Variables Structural Hypothesis Testing Results Diagram. Source: Authors' Field Work (2026).

Note: Values on the arrows are p-values; the value inside the Firm Growth circle is the R^2 of this model.

Hypotheses	Structural paths relationship	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
3_a	FA -> FG	0.371	0.075	4.926	0.021	Supported
3_b	FS -> FG	0.317	0.080	3.979	0.013	Supported
3_c	IND -> FG	0.206	0.068	3.018	0.005	Supported

Figure 24: Control Variables (FA, FS and IND) on FG: Hypothesis Testing. Source: Authors' Field Work (2026).

4.5 Moderating Structural Hypothesis Testing

The moderating effect of CEOD on the relationship between ID and FG is confirmed. The interaction term (ID × CEOD) shows a significant coefficient (β = 0.051, t = 2.166, p = 0.030), indicating that CEOD strengthens the influence of ID on FG. This shows that when CEOs also hold board chair roles, the growth impact of investment decisions becomes stronger. The results are illustrated in **Figure 25**, confirming support for the moderating hypothesis.

Hypotheses	Structural paths relationship	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H_4	CEOD x ID -> FG	0.051	0.023	2.166	0.030	Supported

Figure 25: Moderating Structural Hypothesis Testing Results. Source: Authors' Field Work (2026).

The moderating role of CEOD is validated through the interaction term (CEOD × ID → FG), which is significant (β = 0.051, p = 0.030). This indicates that CEOD strengthens the effect of ID on FG. The strengthening effect is clearly illustrated in **Figure 26**, showing that firms with combined CEO and board leadership gain more growth benefits from strong investment decisions.

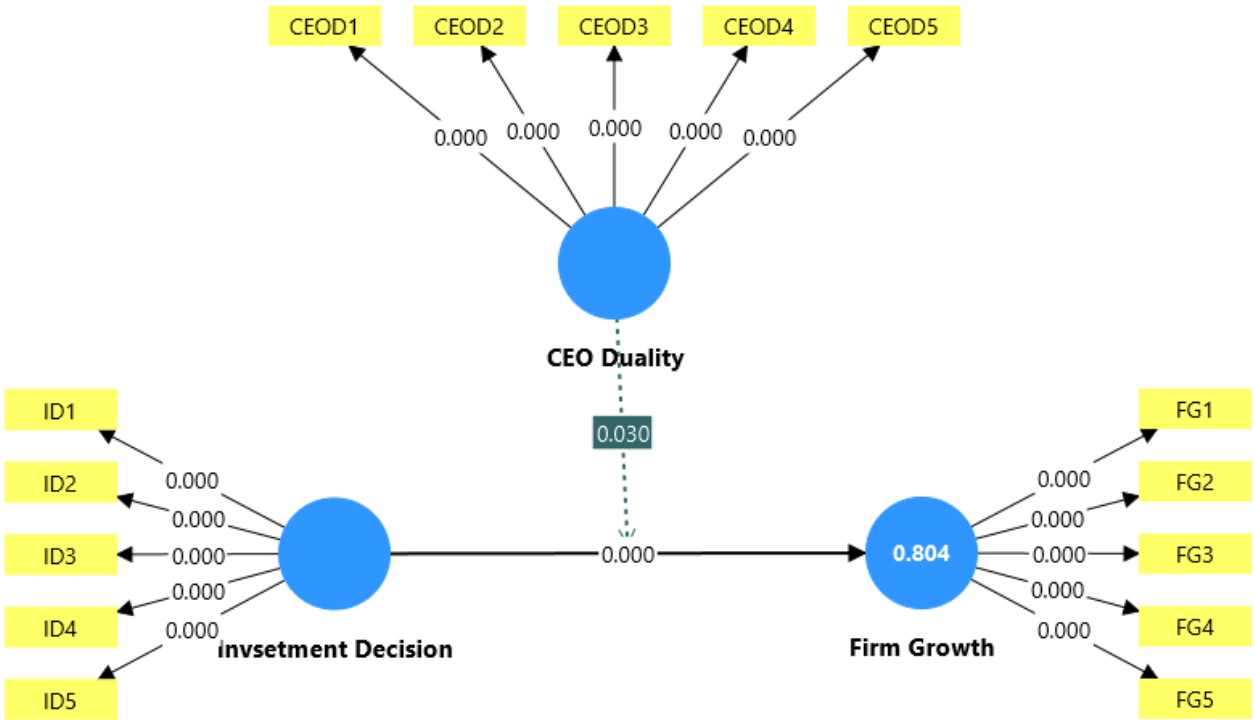


Figure 26: Moderating Structural Hypothesis Testing Results Diagram. Source: Authors' Field Work (2026).

Note: Values on the arrows are p-values; the value inside the Firm Growth circle is the R^2 of this model.

4.6 Moderating Structural Hypothesis Testing with control variables

The moderating effect of CEOD on the relationship between ID and FG remains significant after including FA, FS, and IND. The interaction term (ID × CEOD) shows a significant coefficient (β = 0.031, t = 2.583, p = 0.000), indicating that CEOD strengthens the effect of ID on FG regardless of firm-specific differences. This confirms the robustness of the moderating relationship, as illustrated in Figure 27.

Hypotheses	Structural paths relationship	Original sample (O)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H_{4a}	CEOD x ID -> FG	0.031	0.012	2.583	0.000	Supported

Figure 27: Moderating Structural Hypothesis Testing Results with control variables. Source: Authors' Field Work (2026).

Figure 28 shows that CEOD strengthens the positive relationship between ID and FG, even after controlling for FA, FS, and IND.

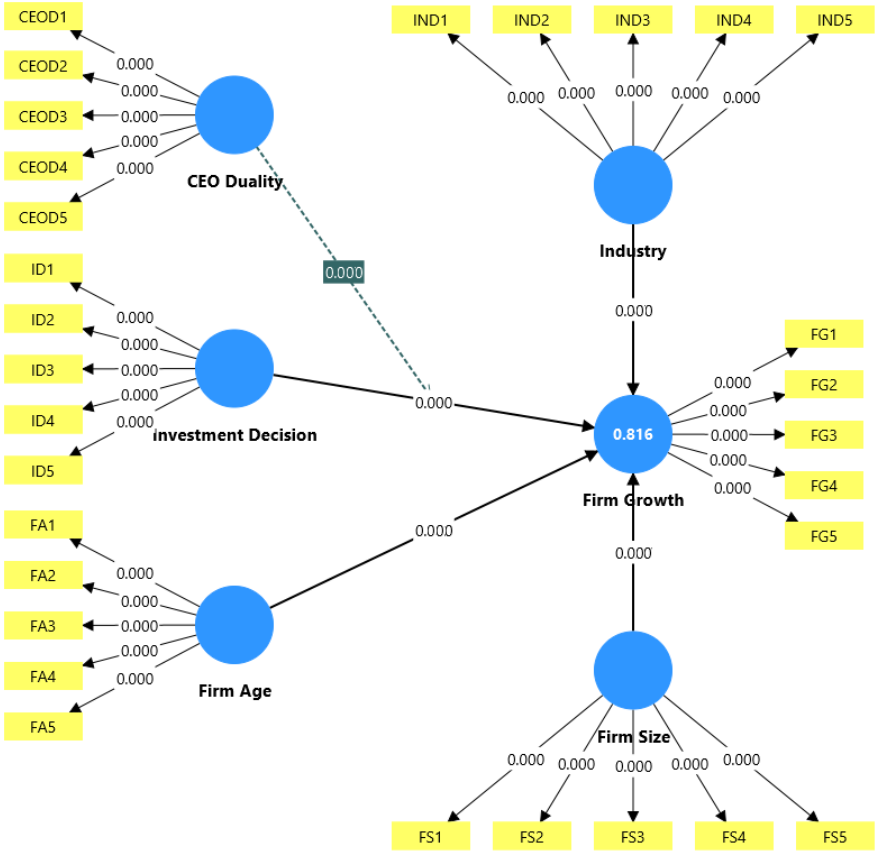


Figure 28: Moderating Structural Hypothesis Testing Results with Control Variables. Source: Authors' Field Work (2026).

Note: Values on the arrows are p-values; the value inside the Firm Growth circle is the R^2 of this model.

4.7 Simple Slope Analysis of the Moderating Effect of CEO Duality

The interaction plot shows that the slope for ID → FG becomes steeper under higher CEOD conditions. When CEOD is present, growth increases more sharply as ID improves, while firms with separated leadership structures show weaker slopes. This pattern is depicted in **Figure 29**, confirming that CEOD enhances the impact of investment decisions on firm growth.



Figure 29: Interaction Plot of ID × CEOD on FG. Source: Authors' Field Work (2026).

5. Discussion of the Findings

The findings indicate that investment decisions (ID) have a significant positive effect on SME firm growth (FG) ($\beta = 0.650$, $t = 12.768$, $p < 0.001$). This suggests that SMEs that consistently engage in structured investment activities such as expansion, replacement, modernization, and contingency planning are more likely to experience improvements in sales, asset base, and market presence. The result supports the view that investment decisions are central to firm performance, particularly when resources are allocated toward productive and growth-enhancing activities. This outcome aligns with Gichuru et al. (2024), Nicolas (2022), and Ali et al. (2024), who similarly report that strategic investment choices improve firm performance. However, the insignificant or

inconsistent effect of diversification suggests that not all investment forms contribute equally to growth, reinforcing findings from Darmansyah (2025) and Ahmed et al. (2023) that emphasize the importance of investment quality rather than breadth.

The results also show that CEO duality (CEOD) has a significant positive relationship with SME firm growth ($\beta = 0.283$, $t = 5.530$, $p < 0.001$), although the direction of the effect depends on governance conditions within firms. In some cases, unified leadership improves efficiency in decision-making and resource allocation, thereby supporting firm growth (Abor & Biekpe, 2007; Li et al., 2022). In other cases, it may weaken monitoring structures and concentrate authority in ways that limit oversight effectiveness, leading to reduced performance (Mubeen, 2021; Hassan et al., 2023). This mixed outcome suggests that CEO duality does not operate in a uniform manner across SMEs but is influenced by internal governance strength and accountability structures.

The moderating effect of CEO duality on the relationship between investment decisions and firm growth ($\beta = 0.051$, $t = 2.166$, $p = 0.030$; $\beta = 0.031$, $t = 2.583$ with the control variables) indicates that governance structure shapes how investment decisions are translated into performance outcomes. Where CEO duality enhances coordination and accelerates approval processes, investment decisions are more effectively implemented, resulting in stronger growth outcomes. However, where duality reduces oversight quality, investment decisions may be poorly executed, weakening their impact on growth. This finding is consistent with Agency Theory, which highlights the importance of alignment between managerial authority and accountability, and the Resource-Based View, which emphasizes the efficient deployment of firm resources for performance improvement.

Control variables included in the model also provide important explanatory contributions. Firm age shows a positive relationship with firm growth ($\beta = 0.371$, $p = 0.021$), suggesting that older firms benefit from accumulated experience, established routines, and stronger stakeholder relationships that support stable expansion (Erdogan, 2023; Angelidou et al., 2022). However, the results also imply that increasing age may sometimes reduce flexibility, limiting the pace of growth in more mature firms (Coad et al., 2018). Firm size also demonstrates a positive association with SME firm growth ($\beta = 0.317$, $p = 0.013$). Larger firms tend to have greater access to financial resources, larger workforce capacity, and economies of scale that support expansion in production and profitability. This finding is consistent with Ahinful et al. (2023) and Kerr & McDougall (2026), who argue that firm size enhances the ability to attract funding and invest in productive activities. Smaller firms, although more flexible, often face resource constraints that limit their growth potential. Industry also has a significant positive effect on SME firm growth ($\beta = 0.206$, $p = 0.005$). Firms operating in manufacturing, services, and trade sectors experience different growth outcomes due to variations in capital intensity, competition levels, and market access conditions. This supports evidence from Essel et al. (2019) and Toku et al. (2020), which highlight that sectoral structure influences how firms convert resources into performance outcomes. The result confirms

that industry differences must be accounted for when examining SME growth, particularly in developing economy contexts such as Ghana.

Overall, the findings confirm that firm growth is shaped not only by investment decisions and governance structures but also by firm-specific characteristics such as age, size, and industry. These factors collectively influence how effectively SMEs are able to translate resources and decisions into sustainable growth outcomes.

The results also carry economic meaning beyond the statistical tests. With a path coefficient of 0.650, a one standard deviation improvement in the quality of investment decisions is associated with an increase of about 0.65 standard deviations in firm growth, holding the other variables constant. For SMEs in Accra and Tema, which rely heavily on internal funds because external credit is costly (Agyei et al., 2020; Nkansah-Sakyi, 2023), this implies that better screening, timing and evaluation of projects can raise sales, assets and employment without additional borrowing. Because SMEs provide a large share of jobs and household incomes in Ghana, modest improvements in how these firms commit capital can add up to meaningful gains in employment and output at the national level (Kerr & McDougall, 2026; World Bank, 2025). The moderating result points in the same direction: when the CEO also chairs the board, the effect of investment decisions on growth becomes larger, so faster and more coherent decisions help firms to convert limited capital into expansion. At the same time, the small size of the interaction ($\beta = 0.051$ without and $\beta = 0.031$ with the control variables) indicates that leadership structure refines, rather than replaces, the effect of sound investment practice.

5.1 Theoretical Implications

The findings extend Agency Theory and the Resource-Based View (RBV) by showing how investment decisions (ID) translate into SME firm growth (FG) under different governance and firm conditions. Agency Theory explains that CEO duality (CEOD) concentrates decision authority, which may improve speed in approving investment decisions or weaken oversight depending on internal governance structures. The results confirm that CEOD shapes the extent to which investment decisions influence firm growth, indicating that governance arrangements influence how effectively strategic decisions are implemented. The RBV further explains that investment decisions represent strategic actions through which firms deploy resources to build capability and improve performance. The findings show that CEOD affects how these resources are coordinated and executed, particularly by improving alignment between managerial actions and strategic priorities. The moderating effect confirms that leadership structure influences how investment inputs are converted into growth outcomes, showing that ID and CEOD operate jointly rather than independently in explaining SME performance.

The inclusion of control variables such as firm-specific characteristics strengthens this explanation. Firm age reflects accumulated experience and operational routines that enhance decision execution over time, while firm size represents resource availability that supports investment implementation and expansion capacity. Industry differences

further explain variation in growth outcomes due to differences in capital requirements, competition intensity, and market conditions across sectors. These controls confirm that investment decisions and governance effects on growth are also shaped by internal capacity and external sector conditions.

5.2 Practical Implications

The findings provide direction for SME owners, managers, and advisors in structuring both investment planning and governance systems. Where CEO duality exists, decision-making tends to be faster, enabling quicker response to investment opportunities that require timely execution. This can improve how SMEs allocate resources to expansion, modernization, and other growth-oriented investments. SMEs are encouraged to consider how leadership structure affects the implementation of investment decisions, particularly in relation to prioritization, monitoring, and execution. Proper alignment between governance structure and investment planning can reduce delays in capital allocation and improve consistency in project execution. Training programs for SME managers should also emphasize how leadership arrangements influence investment appraisal, risk assessment, and resource allocation decisions. Firm-specific characteristics should also be considered in managerial planning. Older firms tend to benefit from experience that supports more efficient investment execution, while larger firms have greater resource capacity to implement growth-related investments. Industry conditions also shape how investment decisions translate into growth outcomes due to differences in competition, regulation, and capital intensity. Understanding these differences can help managers design investment strategies that fit their firm's size, experience level, and sector conditions.

5.3 Policy Implications

The results provide direction for SME support institutions and policymakers. Since investment decisions, CEO duality, and firm-specific characteristics jointly influence SME growth, policy frameworks should support both governance effectiveness and firm capacity development. Capacity-building programmes may be introduced to strengthen managerial competence in investment planning and leadership structure, with attention to how firm age and size influence decision effectiveness. Younger and smaller firms may require targeted support in investment evaluation and resource mobilization, while sector-specific programmes may be designed to address differences in industry conditions. Regulatory and support institutions may also provide guidance on governance structures, particularly where CEO duality is practiced, to ensure that decision authority is balanced with accountability. Strengthening access to advisory services, structured investment evaluation tools, and sector-specific support can improve how SMEs convert investment decisions into growth outcomes across different firm types.

6. Conclusions, Limitations, and Future Research

The study examined the effect of investment decisions on SME firm growth and the moderating influence of CEO duality, while accounting for firm age, firm size and industry as control variables in the Ghanaian context. Investment decisions had a strong positive effect on SME growth ($\beta = 0.650$, $t = 12.768$, $p < 0.001$; $f^2 = 0.440$), which means that firms that allocate resources carefully, evaluate projects before committing funds and time their investments well record higher growth in sales, assets, employment, profit and market reach. CEO duality also had a significant positive direct effect on growth ($\beta = 0.283$, $t = 5.530$, $p < 0.001$; $f^2 = 0.217$), indicating that unified leadership improved coordination and the speed with which decisions were carried out. Together with the control variables, these predictors explained 81.5% of the variance in firm growth ($R^2 = 0.815$; adjusted $R^2 = 0.813$).

CEO duality strengthened the relationship between investment decisions and firm growth. The interaction term was positive and significant without the control variables ($\beta = 0.051$, $t = 2.166$, $p = 0.030$) and remained significant when firm age, firm size and industry were included ($\beta = 0.031$, $t = 2.583$), so SMEs in which the CEO also chairs the board convert investment decisions into growth more effectively. The interaction is small compared with the direct effect of investment decisions, which shows that leadership structure adds to, but does not substitute for, sound investment practice. Firm age ($\beta = 0.371$, $p = 0.021$), firm size ($\beta = 0.317$, $p = 0.013$) and industry ($\beta = 0.206$, $p = 0.005$) also had positive effects on growth: older firms benefit from accumulated experience, larger firms have more resources to commit to expansion, and sector conditions shape how quickly investments pay off. For Ghana, the results imply that improving the investment practices of SMEs, and matching them with a leadership structure that allows timely decisions, can support job creation and private-sector growth.

The study contributes to literature by integrating governance mechanisms, investment behavior, and firm-level characteristics in explaining SME growth in an emerging economy context. It supports both Agency Theory and the Resource-Based View in explaining how governance and resources interact to influence performance.

The study is limited by its cross-sectional design, which restricts assessment of long-term changes in investment decisions, governance structures, and firm growth. The focus on selected SMEs may also limit generalization to other contexts.

Future studies may adopt longitudinal designs to observe changes over time and examine how shifts in governance and firm characteristics affect growth trajectories. Comparative studies across industries, regions, and ownership structures, as well as additional factors such as access to finance and managerial experience, may further strengthen understanding of SME performance dynamics.

Declarations

Ethics Approval and Consent to Participate

Ethical approval was obtained from the Research Committee of KAAF University, following the 1964 Declaration of Helsinki and its amendments. Participation was voluntary, with informed consent secured. Respondents were assured of confidentiality, anonymity, and the right to withdraw at any time.

Author Contributions

MM and EA conceptualized the study and developed the methodology. MM led data analysis, while EA managed data collection and manuscript preparation. Both authors reviewed and approved the final manuscript.

Consent for Publication

All participants provided consent for publication. No personal or identifying information is included in the manuscript.

Availability of Data and Materials

The datasets used in this study are available from the corresponding author on reasonable request.

Competing Interests

The authors declare no competing interests.

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